multi-stage optical amplifier. There are many advantages of a multi-stage optical amplifier which provides amplification and dispersion compensation, with a dispersion compensator between optical amplifiers, as compared to individual amplifiers and dispersion compensators being dispersed along the transmission line in a generally unrelated manner. See, for example, FIGS. 37, 38 and 39, and the disclosure on page 103, line 19, through page 106, line 14, of the specification. See especially page 106, lines 6-14, of the specification.

The Examiner asserts that, in FIG. 14 of Antos, OFA-2, the DC fiber, and OFA-3 together form a multi-stage optical amplifier.

However, it is respectfully submitted that, in FIG. 14 of Antos, OFA-2 is positioned somewhere along the transmission line, but not in the same multi-stage optical amplifier as OFA-3. For example, FIG. 14 of Antos does not show any enclosure enclosing both amplifiers OFA-2 and OFA-3. Column 17, lines 33-58, of Antos, relate to FIG. 14 of Antos, but do not disclose or suggest that OFA-2 is in the same multi-stage optical amplifier as OFA-3.

FIG. 14 of Antos shows a "dotted box" around the DC fiber (22 km), OFA-2 and DC fiber (11km). However, it is clear that this "dotted box" does not include OFA-2. Moreover, this "dotted box" is not intended to represented any type of multi-stage optical amplifier. Instead, from column 17, lines 53-57, of Antos, it is clear that the "dotted box" in FIG. 14 is used to show that a total length of DCF (22km + 11 km) was divided into two sections, to increase the power level at the input of OFA-3. Accordingly, in FIG. 14 of Antos, a "dotted box" around the DC fiber (22 km), OFA-2 and DC fiber (11km), along with another "dotted box" around DC fiber (6.4 km), is used to highlight the relationship between the various DC fibers in the system.

Further, Antos does not disclose or suggest any reason to include OFA-2, DC fiber (11 km) and OFA-2 in the same multi-stage optical amplifier.

Therefore, it is respectfully submitted that FIG. 14 of Antos shows optical amplifiers and DC fibers dispersed along the transmission line, but does not show a "multi-stage optical amplifier" which includes a first amplifier, a dispersion compensator, and a second amplifier, as recited, for example, in claim 164.

Moreover, as indicated above, the claims recite the amplification and dispersion compensation of a "WDM" optical signal.

FIG. 14, and the corresponding disclosure in column 17, lines 33-58, of Antos, do not disclose or suggest the amplification of a WDM optical signal. Instead, it is respectfully

submitted that FIG. 14 simply shows a pattern generator generating and transmitting a 10 Gbit/sec signal. This 10 Gbit/sec signal is NOT a WDM optical signal.

For example, as disclosed in column 17, lines 48-53 of Antos, relating to FIG. 14 of Antos, "OFA#2 was a 980 nm forward-pumped, 25dB gain amplifier, followed by a 1.2 nm bandpass optical filter. OFA#3 comprised two 980 nm backward-pumped amplifiers resulting in 31dB gain, with a saturated output power of +13dBm, followed by a 3 nm bandpass optical filter." Either the 1.2 nm bandpass filter or the 3 nm bandpass filter has a very narrow bandwidth, so it is impossible for the optical amplifier disclosed in FIG. 14 of Antos to amplify a WDM optical signal and for the dispersion compensator disclosed in FIG. 14 of Antos to compensate the dispersion of a WDM optical signal. Rather, this portion of Antos teaches away from amplifying a WDM optical signal by an optical amplifier or compensating for dispersion of the WDM optical signal by a dispersion compensator.

As noted by the Examiner in item (b) on page 2 of the outstanding Office Action, FIG. 2 of Antos shows the use of WDM. More specifically, FIG. 2 of Antos discloses a WDM optical signal including light at 1310 nm and 1550 nm multiplexed together.

However, the 1310 nm and 1550 nm lights are demultiplexed by coupler (demultiplexer) 16. The demultiplexed light at 1550 nm is optically amplified by an optical amplifier 13. The demultiplexed light at 1310 is amplified by a conventional "electrical" repeater 17, which converts the light to an electrical signal, amplifies the electrical signal, and then converts the amplified electrical signal into an optical signal. See, for example, column 8, lines 50-65, of Antos.

More specifically, as disclosed in column 8, lines 58-62 of Antos, "The 1310 nm signal is processed by conventional repeater 17, and the 1550 nm signal is amplified by OFA 13 and its dispersion is compensated by dispersion compensating fiber 14." (Please note that DCF 14 in FIG. 2 provides dispersion compensation to light amplified by OFA 13, but NOT to light amplified by repeater 17.) Thus, FIG. 2 of Antos does NOT disclose an optical amplifier amplifying a WDM optical signal. Moreover, FIG. 2 of Antos does NOT disclose a dispersion compensator compensating for dispersion of a WDM optical signal.

Therefore, it is respectfully submitted that no portion of FIG. 2 discloses a WDM optical signal being amplified by an optical amplifier. Instead, in FIG. 2 of Antos, each wavelength is demultiplexed and individually amplified. Moreover, it is respectfully submitted that no portion of FIG. 2 discloses dispersion compensation of a WDM optical signal.

Therefore, it is respectfully submitted that no portion of Antos discloses or suggests a "WDM" optical signal which is amplified and dispersion compensated by a "multi-stage optical amplifier", as recited, for example, in claim 164.

In view of the above, it is respectfully submitted that the rejection is overcome.

III. IDS

Please note that an IDS was filed on November 5, 2002. It is respectfully requested that the Examiner acknowledge the IDS.

IV. CONCLUSION

In view of the above, it is respectfully submitted that the application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

If any further fees are required in connection with the filing of this response, please charge such fees to our Deposit Account No. 19-3935.

Respectfully submitted,

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